REMARKS/ARGUMENTS

In the Office Action, claims 1-6, 8, 10-20 and 26-30 have been rejected. Claims 7, 9 and 21-25 have been withdrawn pursuant to a Restriction Requirement dated March 27, 2006.

I. Claim Rejections Under 35 U.S.C. § 102

Claims 1-2, 4-6, 8, 10-12, 16-20 and 26-30 have been rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent Publication No. US 2004/0190563 to Gendron (hereafter "Gendron"). Applicant respectfully disagrees for the reasons pointed out below.

Regarding independent claims 1, 16 and 26, the Examiner alleges that Gendron teaches a laser device having an active Q-switch means and a passive Q-switch means. However, independent clams 1 and 26 clearly recite that the loss modulation control from the active and passive Q-switch means enable generation of a short width, high peak power pulse at a lasing wavelength. Independent claim 16 clearly recites that the combined loss modulation control from the active Q-switch and the saturable absorber elements enable generation of a short width, high peak power pulse at a lasing wavelength. This element is not taught by Gendron.

As taught in pages 8 – 9 of the specification, a laser medium 13 is continuously pumped by pumping source 10. During this pumping time, the active switch is closed (the passive switch is also in the closed state because there is no light to saturate the absorber) and cavity loss is maximized such that the laser medium absorbs energy thereby effectively increasing the gain of the device to a certain or even gain-saturated level. Then, the active Q-switch 14 is opened when an electric pulse 15 comes. At that time the laser will then commence lasing at noise level at the intended lasing wavelength, which will be partially absorbed by the absorber 16 and will eventually cause the absorber to become saturated. As a result, the total cavity loss drops dramatically and the laser starts oscillation above noise level and forms the front part of a pulse.

The pulse grows and then drops quickly as it consumes all or most of the gain stored in the laser medium within a short duration. Then the lasing will discontinue and the absorber 16 will recover to its initial state. Subsequently, the active Q-switch will become closed again to complete a full pulsing cycle. The time window of the active Q-switch being opened equals the duration of the electric pulse 15 and should be narrow enough to avoid sub-pulsing.

There is a time interval between the opening of the active Q-switch and the onset of saturation of the absorber. The laser will fire a pulse only when or after the absorber is saturated. Therefore, the absorber also acts as a time-delayer of pulsing. Once the active switch is entirely opened, the cavity loss modulation is only depended on the passive absorber and thereby the duration of the laser pulse is determined by the passive absorber and other cavity parameters, but not the active Q-switch. On the other hand, because the opening of the active Q-switch happens after the laser medium has been pumped to a certain or even saturated gain level, this time interval, i.e., the time of pulsing, will be much more regulated than the timing of the saturation onset of a free-running conventional passive Q-switch laser.

Thus, as a result, a laser with such hybrid Q-switch could produce sub-ns or even shorter pulses due to pulse characteristic of a passive laser and having the high reproducibility as those from an active laser. The pulse repetition rate will be controllable and can be adjusted to a value for the highest peak power or the maximum efficiency. Additionally, by adjusting the opening time window of the active Q-switch, the laser will work well above the lasing threshold without the occurrence of a sub-pulse so that pulses with much higher energy could be generated than a conventional passive laser. Compared to a laser with a normal active Q-switch, the laser of the present invention could generate pulses of shorter duration and higher peak power with same pumping energy, or generates same peak-power pulses with less pumping energy. The hybrid Q-

switch of the present invention combines the advantages of both active and passive Q-switches and eliminates their drawbacks.

Gendron, on the other hand, simply teaches stabilizing pulse output. In Fig. 2A of Gendron, a typical Q-switch laser is shown without additional means to stabilize pulse output. The resulting Q-switch pulse, as can be seen in Fig. 2A, experiences many spikes and is not smooth. Gendron teaches a Q-switch that will produce a smooth temporal pulse (paragraph 0024). In Fig. 2B, Gendron's Q-switch device minimizes the switch-off of the loss by slowing down the process via the addition of saturable losses in parallel with the active switch. Thus, Gendron achieves are the reduction of spiking noise, by producing a smooth temporal pulse.

Gendron fails to teach, among other elements of the claim, the generation of a short width, high peak power pulse through the combination of an active Q-switch means and a passive Q-switch means. Anticipation requires the presence in a single prior art reference, disclosure of **each and every element** of the claimed invention, arranged as in the claim. Lindeman Maschinenfabrik GMBH v. American Hoist and Derrick Company, 730 F.2d 1452, 1458, 221 U.S.P.Q. 481, 485 (Fed. Cir. 1984).

With regard to independent claims 1, 16 and 26, Gendron does not anticipate the claims because Gendron does not recite each and every element of the claims, as pointed out above. Since claims 2, 4-6, 8, 10-12, 15-20 and 27-30 are dependent on the independent claims, these claims incorporate all the limitations of the independent claims and recite additional unique elements and/or limitations. Accordingly, these claims remain patentable over the cited reference.

In view of the above, Applicants respectfully request withdrawal of the 35 U.S.C. § 102(e) rejection of claims 1-2, 4-6, 8, 10-12, 16-20 and 26-30 as being allegedly anticipated by Gendron.

II. Claim Rejections Under 35 U.S.C. § 103

Claims 3 and 13-15 have been rejected by the Examiner under 35 U.S.C. §103(a) as being allegedly unpatentable over Gendron in view of U.S. Patent No. 7,065,121 to Filgas et al. (hereinafter "Filgas").

Regarding the §103(a) rejections of dependent claims 3 and 13-15, it must be noted that the Examiner relies on Gendron, in combination with Filgas, to support the asserted rejections. As set out above, Gendron does not disclose all the elements of independent claim 1. Accordingly, since dependent claims 3 and 13-15 recite additional unique elements and/or limitations, claims 3 and 13-15 remain patentable over the asserted combination since the cited additional reference does not supply the elements missing from Gendron with respect to the independent claim.

Accordingly, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 3 and 13-15 as being allegedly unpatentable over Gendron in view of Filgas.

III. Conclusion

In view of the aforementioned remarks and amendments, the Applicants believe that each of the pending claims is in condition for allowance. Accordingly, Applicants respectfully request allowance of claims 1-6, 8, 10-20 and 26-30. If, upon receipt and review of this amendment, the Examiner believes that the present application is not in condition for allowance

and that changes can be suggested which would place the claims in allowable form, the Examiner is respectfully requested to contact Applicants' undersigned counsel at the number provided below.

Please charge any additional fees that may be due, or credit any overpayment of same, to Deposit Account No. 03-1250 (Ref. No. 040017U0008).

Respectfully submitted,

Date: 11/17/06

Aasheesh Shravah
Registration No. 54,445